

ABSTRACT OF THE DISCLOSURE

Method and apparatus for non-invasively determining the time onset ( $T_{\text{onset}}$ ) and end ( $T_{\text{end}}$ ) of patient inspiratory efforts. A composite pressure signal is generated comprising the sum of an airway pressure signal, a gas flow pressure signal obtained by applying a gain factor ( $K_f$ ) to a signal representing gas flow rate and a gas volume pressure signal obtained by applying a gain factor ( $K_v$ ) to a signal representing volume of gas flow.  $K_f$  and  $K_v$  values are adjusted to result in a desired linear trajectory of composite pressure signal baseline in the latter part of the exhalation phase. The current composite pressure signal is compared with (i) selected earlier composite pressure signal values and/or (ii) value expected at current time based on extrapolation of composite pressure signal trajectory at specified earlier times and/or (iii) the current rate of change in the composite pressure signal with a selected earlier rates of change. The differences obtained by the comparison are compared with selected threshold values.  $T_{\text{onset}}$  is identified when at least one of the differences exceeds the threshold values.